Original Investigation

Correspondence and Correlates of Couples' Skin Cancer Screening

Carolyn J. Heckman, PhD; Susan Darlow, PhD; Sharon L. Manne, PhD; Deborah A. Kashy, PhD; Teja Munshi, BDS, MPH

E arly detection of skin cancer, specifically through total cutaneous examination (TCE) by a clinician or skin self-examination (SSE) (or partner examination), is key for treating skin cancers successfully because survival rates for patients with melanoma decrease as tumor thickness increases.1,2 Many professional organizations support skin cancer screening of high-risk individuals.3-5 Both the National Cancer Institute and the American Cancer Society recommend monthly SSEs.3-5 Unfortunately, skin cancer screening uptake is low. Rates of ever having had a TCE are approximately 15% to 17% among US adults.6-7 Studies8-14 of US and Australian adults conducted from 1991 to 2004 found that only 23% to 61% of individuals performed SSE at least once each year.

Although many individual attitudinal factors influence skin cancer screening and surveillance (eg, perceived risk of skin cancer and perceived benefits of screening),12,15 it is widely thought that social influences may also have a role in skin cancer screening. One key social influence is the spousal relationship. Partners influence one another's health behaviors, for example, in terms of engagement in physical activity and quitting smoking.16,17 One indicator of relationship influence may be concordance (correspondence and agreement) between partners' health behavior (eg, cancer screening) practices. Little is known about correspondence for cancer screening, but the limited existing evidence suggests that cancer screening correspondence is high. For example, our prior work has suggested that couple correspondence for colorectal cancer screening ranges from 64% to 74% (S.L.M. et al, unpublished data, date unknown). Thus, indirect evidence suggests that couples may have a relatively strong influence on one anothe-

IMPORTANCE Skin cancer is common among older adults. Some national organizations recommend total cutaneous examination (TCE) and skin self-examination (SSE) for skin cancer detection. Although the spousal relationship is a known influence on health behavior, little is known about the level of correspondence in skin screening among couples.

OBJECTIVE To investigate correspondence of TCE and SSE among older couples, demographic correlates of correspondence, and correspondence among barriers to skin examinations.

DESIGN, SETTING, AND PARTICIPANTS Cross-sectional online survey of cohabitating partners 50 years or older performed from June 1, 2010, through July 31, 2010, via the nationally representative GfK (Gesellschaft für Konsumforschung or Society for Consumer Research) Internet panel.

MAIN OUTCOMES AND MEASURES Both TCE in the past 3 years and SSE in the past year.

RESULTS Correspondence among partners was high. For TCE, both partners had completed TCE in 23.9%, and both partners had not completed TCE in 47.3%. With regard to SSE, both partners had completed SSE in 39.8%, and both partners had not completed SSE in 38.9%. Correlates of both partners not completing TCE include lower household income, larger household size, nonmetropolitan residence, living in the Midwest, and being in a same-sex relationship. Correlates of both members not completing SSE included larger household size and being in a same-sex relationship. Barriers to screening that members of couples reported were similar to one another.

CONCLUSIONS AND RELEVANCE Couples were mostly concordant with regard to engagement in skin examinations. Therefore, dyadic interventions to increase screening rates could be useful. Certain sociodemographic groups should especially be targeted.


Author Affiliations: Fox Chase Cancer Center, Philadelphia, Pennsylvania (Heckman, Darlow, Munshi); The Cancer Institute of New Jersey, New Brunswick (Manne); Michigan State University, East Lansing (Kashy).

Corresponding Author: Carolyn J. Heckman, PhD, Fox Chase Cancer Center, Young Pavilion P4163, 333 Cottman Ave, Philadelphia, PA 19111 (Carolyn.Heckman@fccc.edu).
er’s cancer screening practices. In addition, although we know that women tend to engage in more preventive health behaviors than men, we know virtually nothing about engagement in certain health behaviors, such as cancer screening, among homosexual couples compared with heterosexual couples. It is possible that skin screening is more likely to correspond among homosexual couples because partners correspond in terms of sex, but this is unknown.

The present study used a large national sample and had 3 aims. Our primary aim was to explore the correspondence among members of couples 50 years and older for TCE and SSE. We hypothesized that correspondence would be high among partners in terms of both positive and negative correspondence. Our secondary aim was to assess couple-level correspondence. Our third aim was to evaluate the degree of correspondence among couples for their perceived barriers to TCE and SSE. On the basis of previous work about the topic, our goals are descriptive, and so we do not have directional hypotheses. Our third aim was to evaluate the degree of correspondence among couples for their perceived barriers to TCE and SSE. Because little is known about this topic, our goals are descriptive, and so we do not have directional hypotheses. Our third aim was to evaluate the degree of correspondence among couples because partners correspond in terms of sex, but this is unknown.

Methods

Participants and Procedures

This study was approved and monitored by a cancer center institutional review board. Data for the present study were collected from June 1, 2010, through July 31, 2010. Inclusion criteria were age of 50 years or older and married or living with a partner at the same residence. A total of 3711 of the 4801 GfK (Gesellschaft für Konsumforschung or Society for Consumer Research) panel members (77.3%) queried for participation responded (Figure). A total of 2311 responding panel members (62.3%) then invited their partners to participate. A total of 2288 invited partners (99.0%) responded.

Participants were recruited from GfK, a company that specializes in probability-based online research. Participants were identified by GfK from their KnowledgePanel, an online panel based on a representative sample of the full US population. GfK selects households for recruitment by using random-digit dialing or address-based sampling. Panel members were recruited by telephone and mail surveys, and households are provided with access to the Internet and hardware if needed. Thus, recruitment is based on a dual sampling frame that includes both listed and unlisted telephone numbers, telephone and nontelephone households, and cell phone–only households. The GfK sample is demographically comparable with samples that are obtained using random-digit dialing. Once participants have been selected for the panel, responding to any given survey is voluntary, and the provision of Internet service is not dependent on completion of any specific survey. Even though panel members complete surveys regularly, those who complete more surveys do not differ from those members who complete fewer.

The households are sent an advance mailing informing them that they have been selected to participate in KnowledgePanel 7 to 9 days before a recruitment telephone call. After the advance letter, the telephone recruitment process began for all sampled telephone numbers. Once a person was recruited to the panel, they were contacted primarily by e-mail. For those panel members without Internet access, a laptop was custom configured with individual e-mail accounts so that it would be ready for immediate use by the household members. Panel members who had Internet access provided GfK with their e-mail accounts, and their surveys were sent to that e-mail account. For all new panel members, demographic information, such as sex, age, race/ethnicity, income, and educational level, were collected in a follow-up survey. The demographic information already available was used as an initial screener of age and marital status eligibility for this study.

When surveys are assigned to KnowledgePanel members, they receive notice in their password protected e-mail account that the survey is available for completion. Participants followed the link to the survey and acknowledged reading through the online consent document before proceeding to the survey. Surveys were self-administered online and were accessible any time of day for a designated period of 6 weeks. If after 6 weeks a survey was not completed, the participant was considered a passive refuser. For the present study, GfK randomly selected one person per household for the initial e-mail solicitation. Thus, the first person could be the husband or wife. After the first person completed the screening questions, he or she was asked to hand off the screening questions to his or her spouse so the spouse could complete them if the respondent confirmed he or she had a spouse older than 50 years. Participants receive ongoing incentives from GfK, such as entries in raffles, for participating in surveys.

Measures

Participants were asked to indicate whether, in the last 3 years, they had had their skin checked from head to toe for skin cancer by a dermatologist or other health care professional. If they indicated they had not, they were asked to indicate their reasons for failing to do so. A list of potential reasons was provided along with an “other, please specify” option, which was coded. Participants were also asked to indicate whether they checked their own skin from head to toe or had a partner help with doing so during the past year. As with an examination from a health care professional, they were asked to indicate...
their reasons for not checking their skin. Demographic variables, including age, sex, race/ethnicity, educational level (asked of only one partner), employment status, income, household size (asked of only one partner), US region of residence, whether participants lived in a metropolitan area (asked of only one partner), and whether participants had health insurance, were also assessed.

Results

Screening Correspondence

As mentioned previously, correspondence can be considered either positive or negative. Positive correspondence is when both partners were screened, and negative correspondence is when neither partner was screened. One methodologic consideration is whether the 2 partners are distinguishable as a function of some variable. The heterosexual dyad members can be distinguished by their sex, and assessing correspondence with distinguishable dyads can be computed using a standard Cohen κ. Of 2109 heterosexual couples, 505 (23.9%) matched in terms of both having had a TCE in the past 3 years, and 997 (47.3%) matched in terms of neither having been screened by a health care professional.

In contrast, the screening status of 607 couples (28.8%) was discordant for TCE (in 266 couples the wife was screened but the husband was not, and in 341 couples the husband was screened but the wife was not). Thus, the overall rate of correspondence was 71.2%, and the Cohen κ = 0.392 (t = 18.06, P < .001), indicating that this level of similarity was unlikely to have occurred by chance.

The sample also included 179 gay and lesbian couples, and in these couples the 2 dyad members are said to be indistinguishable by sex. As a result, assignment of each person to the role of partner 1 or partner 2 is arbitrary, and this factor must be considered when assessing correspondence. Using the approach described in Kenny and colleagues, we computed a modified version of the Cohen κ and found that κ = 0.758 (t = 10.16, P < .001). In the gay and lesbian couples, the correspondence was especially high at 88.8%. Specifically, 55 couples (30.7%) corresponded that they both reported being screened by a health care professional, 104 couples (58.1%) corresponded not having been screened by a health care professional, and only 20 (11.2%) were discordant couples.

A similar pattern emerged for SSE. Of 2108 heterosexual couples, 838 (39.8%) matched in terms of both having been self-screened in the last year, and 821 (38.9%) matched in terms of neither having been self-screened, and so the overall rate of correspondence was 78.7%. In contrast, only 449 couples (21.3%) were discordant for SSE (262 couples in which the wife conducted SSE but the husband did not, and 187 couples in which the husband conducted SSE but the wife did not). Thus, partners’ screening status generally agreed (κ = 0.58, t = 26.44, P < .001). As with TCE, SSE correspondence rates were higher in gay and lesbian couples. Of 176 couples, there were 89 (50.6%) in whom neither had SSE, 65 (36.9%) in whom both had SSE, and only 22 (12.5%) discordant couples. Overall correspondence was 87.5% (κ = 0.745, t = 9.89, P < .001).

Dyadic Demographic Factors That Predict Screening Correspondence and Discordance

We conducted χ² analyses to examine differences in correspondence patterns as a function of sexual orientation, metropolitan area, and US region of residence. Results are given in Table 1. As noted earlier, the pattern of health care professional screening correspondence differed somewhat as a function of sexual orientation, and a statistically significant χ² test reflected this difference, such that gay and lesbian couples were more likely to correspond (either positively or negatively) than heterosexual couples. Results for SSE were somewhat similar in that gay and lesbian couples were especially unlikely to be discordant; however, for SSE, these couples were actually more likely to be negatively concordant and less likely to be positively concordant than heterosexual couples. In addition, we examined whether sex moderated correspondence in homosexual couples, and we found no evidence of differences for gay vs lesbian couples.

Pooling across sexual orientation, individuals living in metropolitan areas were somewhat more likely to be positively concordant in health care professional screening, and those in nonmetropolitan areas were somewhat more likely to be negatively concordant. In addition, couples in the Midwest were substantially overrepresented in the negatively concordant group for health care professional screening. Neither metropolitan area nor US region of residence related significantly to correspondence in SSE.

One-way analysis of variance was used to examine mean differences in household income and household size as a function of correspondence, again pooling across sexual orientation. Tukey least significant difference analyses were conducted to examine mean differences between groups. As the means for TCE in Table 1 suggest, negatively concordant couples had significantly lower household income than discordant or positively concordant couples. Given the way income was assessed, the means indicate that negatively concordant couples had an approximate mean annual income of $82 000, whereas discordant couples’ mean income was approximately $91 000, and positively concordant couples’ income was approximately $93 000. No significant mean differences were found in income for SSE correspondence. Finally, household size results indicate that couples who were positively concordant with respect to both health care professional screening and self-screening tended to live in significantly smaller households than either discordant or negatively concordant couples.

Barriers to Screening

Participants who had not had a TCE in the past 3 years were provided with a list of 17 possible reasons to explain why they had not been screened. They were also permitted to write in additional reasons, which were then coded and categorized. Participants endorsed as many reasons as applied. Likewise, they were asked to identify reasons for failing to conduct an SSE in the last year. Barriers endorsed for TCE and SSE were counted (Table 2). The 3 most common reasons for both questions were the same: “My health care professional hasn’t recommended a skin examination,” “I don’t think I’m at risk for...
skin cancer,” and “I don’t have any symptoms of skin cancer.” The most frequent explanation offered by participants was that their health care professional had not recommended a skin examination, and the correspondence rate for that question was 81.9% for the TCE group and 77.5% for the SSE group. Notably, both members of 61.0% of couples reported that their health care professional had not recommended skin cancer screening to them (whereas in 20.9% of couples, both members did not endorse this barrier).

### Discussion

Although it is widely thought that performance of health behaviors, including skin examinations for cancer, are influenced by one’s significant other, this topic has received little attention. In this initial examination of couple correspondence for skin cancer screening, we found that correspondence was high for both performance and nonperformance of these behaviors. We were also able to identify several correlates of couple correspondence for not having had a TCE and SSE. The types of barriers to having a TCE that each member endorsed were similar to one another.

The high overall couple correspondence of TCE and SSE suggests that couples may be an appropriate unit of intervention for skin cancer detection intervention, as has been suggested in studies of correspondence within other health behavior work, such as couples’ risky sexual behaviors. To increase the likelihood of skin cancer screening among non-screening couples, one study found that intervening on a dyadic level was effective, although quality of partner relationship, attitudes toward SSE, self-efficacy, comfort with SSE assistance, and concern about sun-damaged skin should be taken into account when developing these interventions.

### Table 1. Demographic Correlates of Skin Screening for 2288 Couples

<table>
<thead>
<tr>
<th>Correlate</th>
<th>Screening by Health Care Professional</th>
<th>Self- or Partner Screening</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Neither Checked</td>
<td>One Checked</td>
</tr>
<tr>
<td>Sexual orientation, No. (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heterosexual</td>
<td>997 (47.3)</td>
<td>607 (28.8)</td>
</tr>
<tr>
<td>Gay/lesbian</td>
<td>104 (58.1)</td>
<td>20 (11.2)</td>
</tr>
<tr>
<td>Metropolitan area, No. (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan area</td>
<td>865 (46.9)</td>
<td>513 (27.8)</td>
</tr>
<tr>
<td>Not a metropolitan area</td>
<td>236 (53.3)</td>
<td>114 (25.7)</td>
</tr>
<tr>
<td>US region of residence, No. (%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>175 (45.6)</td>
<td>115 (29.9)</td>
</tr>
<tr>
<td>Midwest</td>
<td>359 (55.1)</td>
<td>162 (24.8)</td>
</tr>
<tr>
<td>South</td>
<td>352 (45.4)</td>
<td>217 (28.0)</td>
</tr>
<tr>
<td>West</td>
<td>215 (45.2)</td>
<td>133 (27.9)</td>
</tr>
<tr>
<td>Household, mean (SD)²</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>3.3 (1.6)</td>
<td>3.6 (1.7)</td>
</tr>
<tr>
<td>Size</td>
<td>2.5 (1.0)</td>
<td>2.4 (0.9)</td>
</tr>
</tbody>
</table>

* P < .01.  
* b P < .05.  
* F values rather than χ² test values are reported for household variables. Household income is coded in increments of $25,000; F tests have df = 2, 2285.

### Table 2. The 3 Most Common Reasons for Failing to Receive Skin Examinations

<table>
<thead>
<tr>
<th>Reason</th>
<th>Endorsed, No. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Failing to have a health care professional screening (n = 1117)</td>
<td></td>
</tr>
<tr>
<td>My health care professional hasn’t recommended a skin examination</td>
<td>233 (20.9)</td>
</tr>
<tr>
<td>I don’t think I’m at risk for skin cancer</td>
<td>773 (69.2)</td>
</tr>
<tr>
<td>I don’t have any symptoms of skin cancer</td>
<td>559 (50.0)</td>
</tr>
<tr>
<td>Failing to conduct a skin self-examination (n = 923)</td>
<td></td>
</tr>
<tr>
<td>My health care professional hasn’t recommended a skin examination</td>
<td>361 (39.1)</td>
</tr>
<tr>
<td>I don’t think I’m at risk for skin cancer</td>
<td>601 (65.1)</td>
</tr>
</tbody>
</table>

* P < .001 for all κ values.
Dyadic interventions could be implemented in dermatology or primary care clinics. A study of skin examinations in patients with melanoma found that male patients assisted by female partners performed more thorough examinations than others. In addition, among discordant couples, the screening member of the couple could potentially have a role in intervening with the nonscreening partner; however, more research in this area is needed.

The current study identified demographic characteristics of couples who were concordant and discordant for skin examinations and identified additional psychosocial characteristics of couples that may be informative for future intervention studies. Several demographic correlates associated with lack of skin examination among couples are indicators of lower socioeconomic status, which is consistent with prior research. The nature of these demographic correlates suggests a potential lack of accessibility to TCE and related follow-up treatment. The fact that same-sex couples generally had both higher positive and negative correspondence and had lower engagement in both TCE and SSE is a novel finding. There may be a higher level of correspondence among same-sex couples because of similarities based on sex. Indeed, the results of prior studies have demonstrated differences in skin cancer screening rates based on sex. The literature also suggests that homosexual individuals might be less likely to seek health care services, perhaps because of difficulty obtaining coinsurance or perceived prejudice. Finally, major barriers to skin examination shared by both nonadherent partners could be addressed by patient education about and health care professional recommendation of skin examinations, especially among those of a lower socioeconomic status, and patient education regarding personal skin cancer risk and the nature of skin cancer symptoms.

The major strength of the study is its large national sample. Potential limitations are that the outcomes were self-reported, the sample was recruited from an Internet panel, recruitment required one partner to pass the survey on to the other partner, and the focus of the study was more empirical than theoretical. Regarding self-report, many skin cancer prevention and detection studies use self-report measures as outcomes, and several studies have demonstrated the reliability and validity of these measures. Although the sample was recruited from an Internet panel, there is evidence that the demographics of the GfK panel are representative of the nation in general. Not all Internet panel members or partners who were recruited participated. However, 77.3% of panel members and 61.6% of partners responding are still high response rates. Finally, the current empirical findings can help inform future theory regarding skin cancer screening among couples.

ARTICLE INFORMATION

Author Contributions: Drs Heckman, Darlow, Manne, and Kashy had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Heckman, Manne.
Acquisition of data: Manne.
Analysis and interpretation of data: Heckman, Darlow, Manne, Kashy.
Drafting of the manuscript: All authors.
Critical revision of the manuscript for important intellectual content: Heckman, Darlow, Manne, Kashy.
Statistical analysis: Kashy, Darlow.
Obtained funding: Manne.
Administrative, technical, and material support: Heckman, Manne, Munshi.
Study supervision: Manne.

Conflict of Interest Disclosures: None reported.

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Additional Contributions: Sara Worhash, MS, Kristen Sorice, BA, Megan Joint, DO, Alexa Steuer, Jeanne Pomenti, BS, and GfK provided assistance with the preparation of the data and manuscript.

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